

increases the overall height of the outlet valve, which can limit the range of cisterns to which it may be fitted.

Object of the Invention

5 It is an object of the present invention to substantially overcome or at least ameliorate one or more of the above prior art disadvantages.

Summary of the Invention

10 Accordingly, in a first aspect, the present invention provides a cistern outlet valve mounting bracket assembly, said assembly including first and second bracket members adapted for positioning about an outlet valve in engagement with each other and the valve, said members having means to allow fixing of said engaged members to a cistern.

15 The members preferably each include a semi-circular recess, each adapted to receive a portion of the outlet valve therein. The recesses preferably have teeth adapted to engage with corresponding openings in the outlet valve.

The members preferably engage at one or more regions, most preferably two, also having said means to allow fixing. Said means to allow fixing are desirably one or
20 more openings in the assembled members that are each adapted to receive a fixing shaft therethrough. In a preferred form, the openings comprise a pair of shaft portions in the first member and a corresponding pair of apertures in the second member, the second member having barbs adapted to engage with the first member. The barbs are preferably adapted to engage with the first member substantially adjacent the shaft portions.

25 In a second aspect, the present invention provides a method of installing an outlet valve in a cistern, said method including positioning first and second bracket members about the outlet valve and in engagement with each other and the outlet valve and then fixing said engaged members to said cistern.

30 The members are preferably fixed to the cistern with one or more fixing shafts that pass through corresponding openings in the engaged members.

Brief Description of the Drawings

35 A preferred form of the present invention will now be described, by way of example only, with reference to the accompanying drawings wherein:

Fig. 1 is a perspective view of an embodiment of a cistern outlet valve mounting bracket assembly according to the invention;

Fig. 2 is an exploded perspective view of the assembly shown in Fig. 1 prior to engagement with a cistern outlet valve;

5 Fig. 3 is a perspective view of the assembly shown in Fig. 1 partially engaged with a cistern outlet valve;

Fig. 4 is a perspective view of the assembly shown in Fig. 1 after engagement with an outlet valve; and

10 Fig. 5 is a perspective view of the assembly and valve shown in Fig. 4 installed within a cistern.

Detailed Description of the Preferred Embodiment

Referring firstly to Fig. 1, there is shown an embodiment of a cistern outlet valve mounting bracket assembly 10 according to the invention. The assembly 10 includes first and second moulded, glass-filled nylon bracket members 12 and 14. The members 12, 14 each include a semi circular recess 16, 18 respectively which are each adapted to receive a portion of a substantially cylindrical outlet valve 20 therein. The valve 20 has a tail 22. The recesses 16, 18 include teeth 24 which are adapted to engage with corresponding openings 26 (as best seen in Fig. 2) in the valve 20.

20 As best shown in Fig. 3, the first member 12 includes two shaft portions 28 and recesses 30. The second member 14 includes a two corresponding apertures 32 and barbs 34. When the members 12,14 are brought together (see Fig. 4) about the valve 20, the barbs 34 engage with the recesses 30 in a position in which the apertures 32 align with the shaft portions 28 and the teeth 24 enter the openings 26.

25 The installation of the assembly 10 shall now be described. Figs. 2, 3 and 4 show sequentially how the members 12 and 14 are brought into engagement with one another about the outlet valve 20 until they ultimately engage each other, and also the outlet valve 20, to form the valve/assembly 36. Fig. 5 shows the valve/assembly 36 installed within a cistern 38 by passing the tail 22 of the valve 20 through an opening (not shown) in the base of the cistern 38 whilst passing the openings/apertures 28/30 over a correspondingly positioned pair of captive bolts (not shown). The assembly/valve 36 is fixed to the cistern 38 by fastening a pair of wingnuts 40 to the bolts.

30 A seal (not shown) is positioned between the adjacent surfaces of the interior of the cistern 38 and the exterior of the valve/assembly 36.

It should be noted that the installation in Fig. 5 is shown in relation to a separate cistern for ease of description only. The preferred use of the outlet valve mounting bracket assembly is in mounting an outlet valve to a cistern forming part of a one piece toilet suite.

- 5 The assembly described above has several advantages over the prior art arrangements. Firstly, the installation of the assembly and the valve described results in only one potential leak path between the assembly/valve and the cistern. Secondly, the assembly may be inexpensively manufactured by injection moulding in a thermoplastic material, and can be quickly and easily installed into engagement with the outlet valve.
- 10 Thirdly, the assembly can be used with an outlet valve which is also suitable for use in a toilet suite having a separate cistern and pan, thereby reducing production and inventory costs. Fourthly, the bracket enables an outlet valve to be fixed to the cistern in a manner allowing easy removal without requiring a nut on the (inaccessible) tail of the outlet valve.
- 15 Although the invention has been described with reference to a specific example, it would be appreciated by those skilled in the art that the invention may be embodied in many other forms.

The claims defining the invention are as follows:

1. A cistern outlet valve mounting bracket assembly, said assembly including first and second bracket members adapted for positioning about an outlet valve in engagement with each other and the valve, said members having means to allow fixing
5 of said engaged members to a cistern.
2. The assembly as claimed in claim 1, wherein the members each include a semi-circular recess, each adapted to receive a portion of the outlet valve therein.
3. The assembly as claimed in claim 2, wherein the recesses have teeth adapted to engage with corresponding openings in the outlet valve.
- 10 4. The assembly as claimed in claim 3, wherein the members engage at one or more regions also having said means to allow fixing.
5. The assembly as claimed in claim 4, wherein the members engage at two said regions.
6. The assembly as claimed in claim 4 or 5, wherein said means to allow
15 fixing are one or more openings in the assembled members that are each adapted to receive a fixing shaft therethrough.
7. The assembly as claimed in claim 6, wherein the openings comprise a pair of shaft portions in the first member and a corresponding pair of apertures in the second member, the second member having barbs adapted to engage with the first
20 member.
8. The assembly as claimed in claim 7, wherein the barbs are adapted to engage with the first member substantially adjacent the shaft portions.
9. A method of installing an outlet valve in a cistern, said method including positioning first and second bracket members about the outlet valve and in
25 engagement with each other and the outlet valve and then fixing said engaged members to said cistern.
10. The method as claimed in claim 9, wherein the members are fixed to the cistern with one or more fixing shafts that pass through corresponding openings in the engaged members.
- 30 11. A cistern outlet valve mounting bracket assembly substantially as hereinbefore described with reference to the accompanying drawings.

12. A method of installing an outlet valve in a cistern, said method substantially as hereinbefore described with reference to the accompanying drawings.

Inventor: ENGLAND
Docket No.: 03961.0059USWO
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METHOD OF INSTALLING AN OUTLET VALVE IN A CISTERN
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Sheet 1 of 5

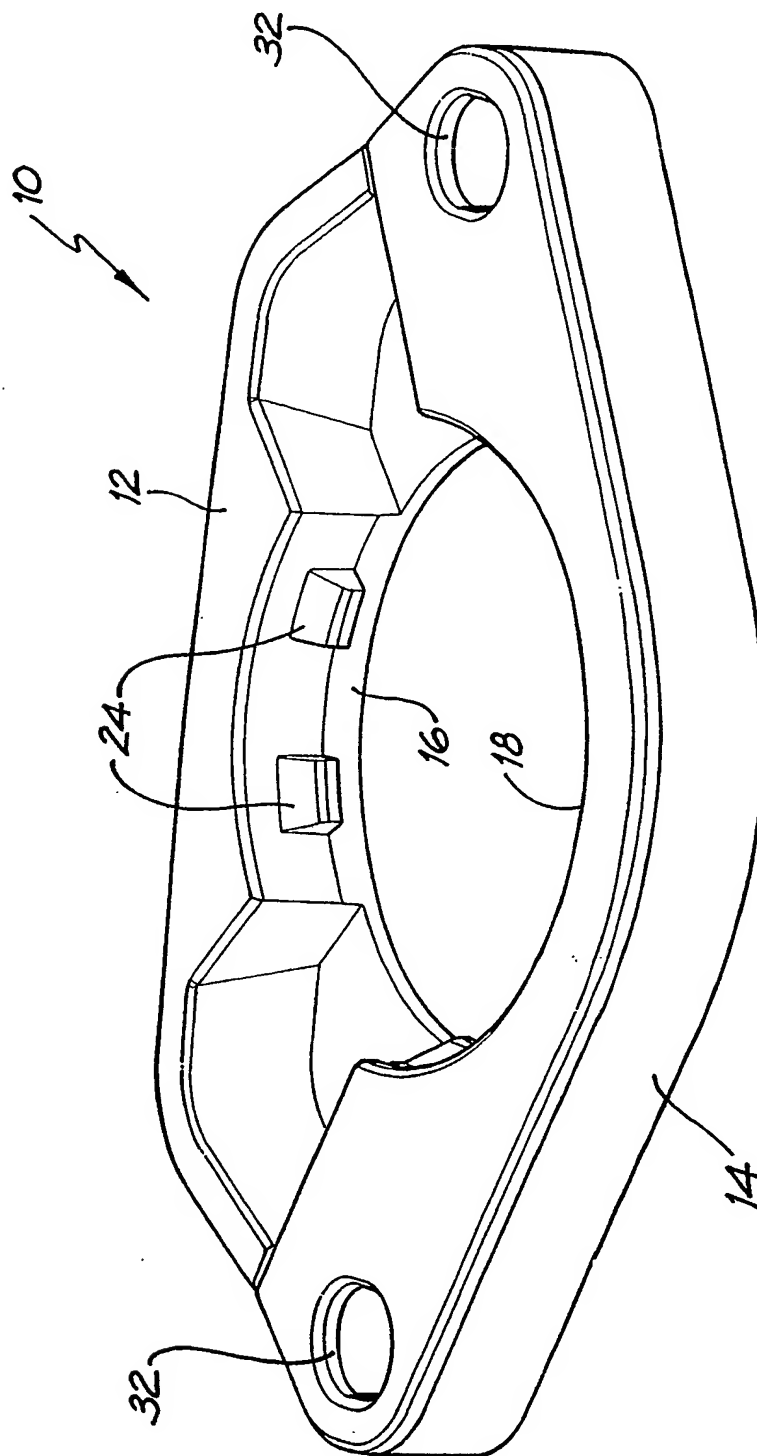


FIG. 1

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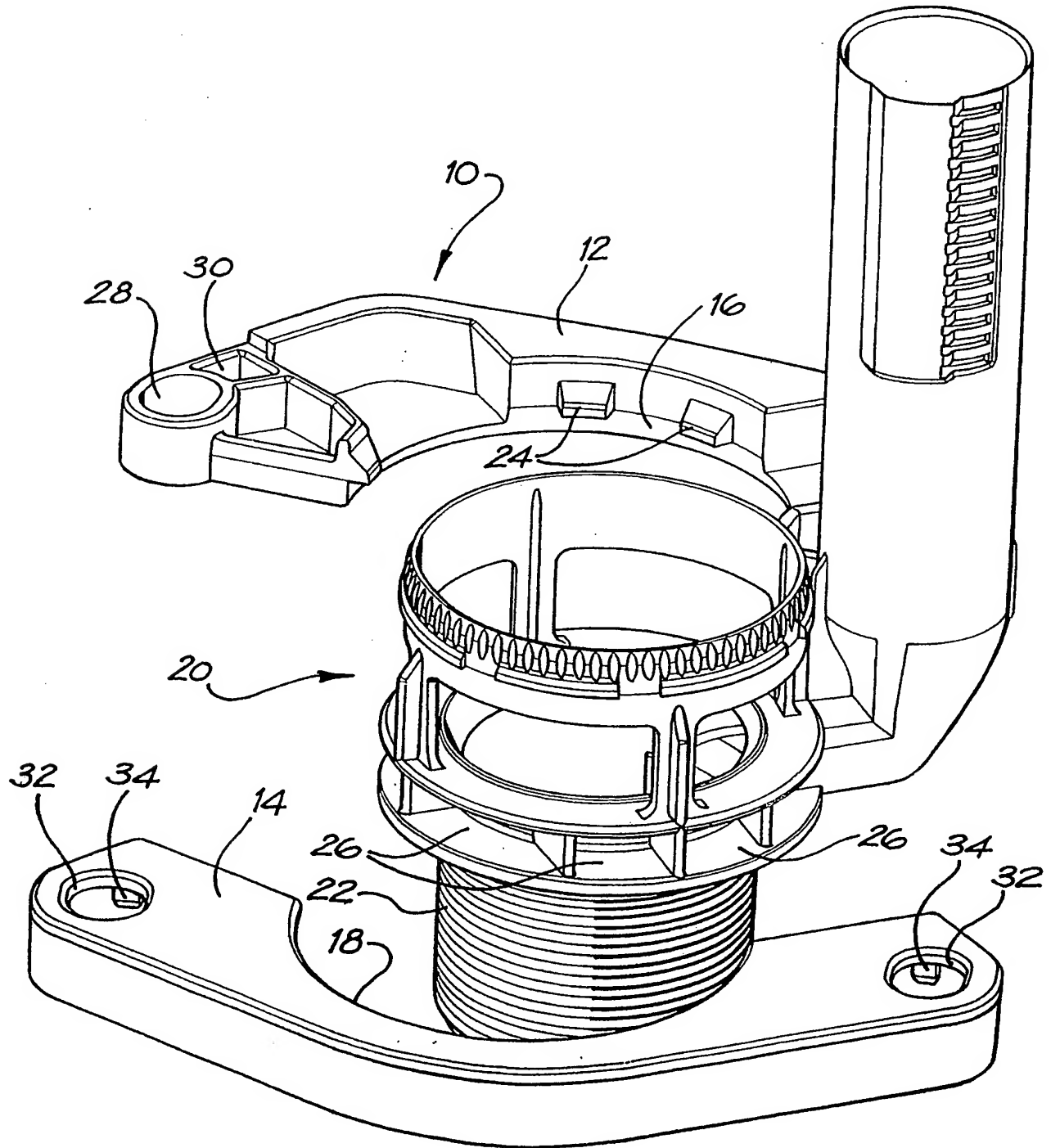


FIG. 2

Inventor: ENGLAND
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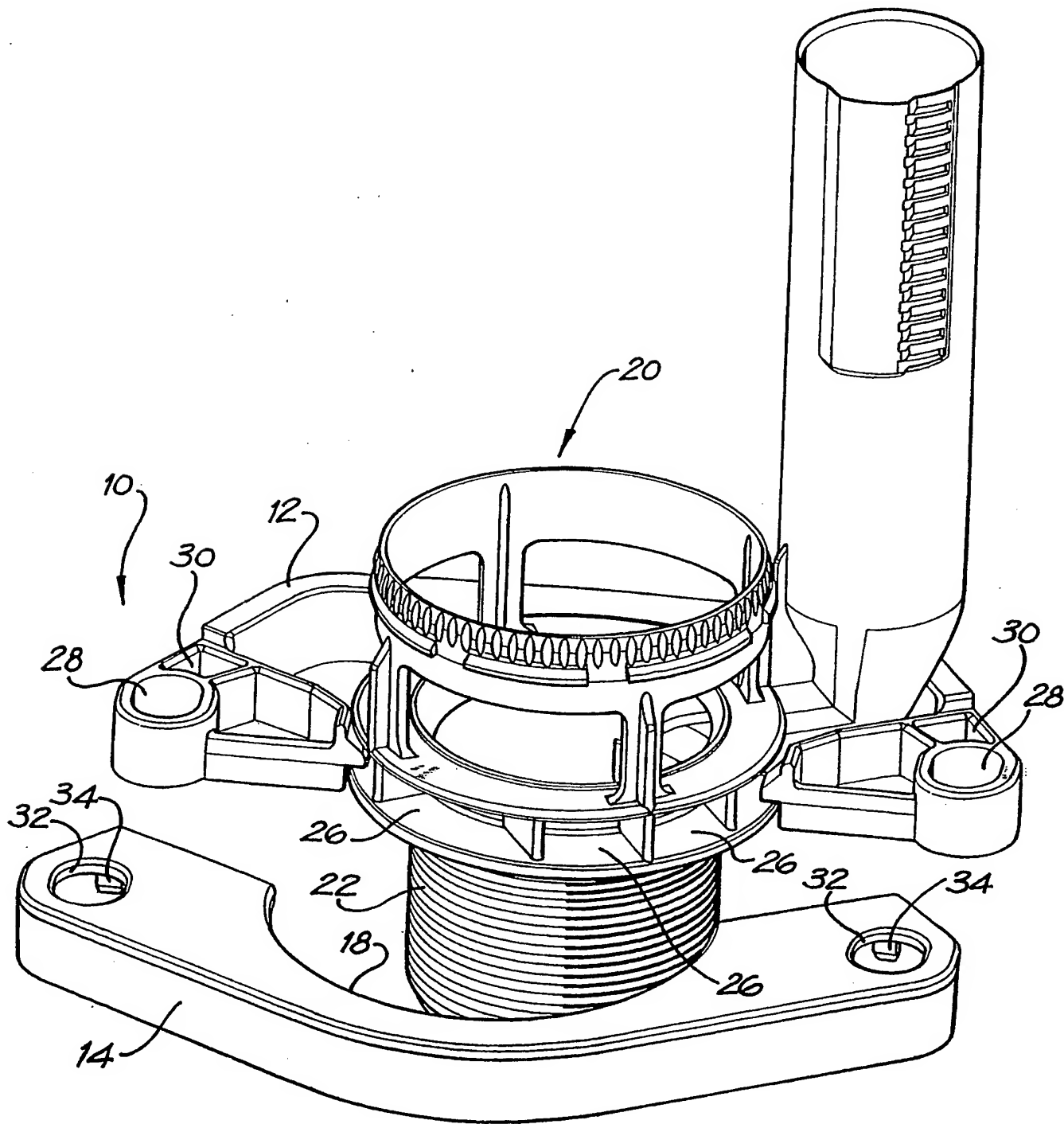


FIG. 3

Inventor: ENGLAND
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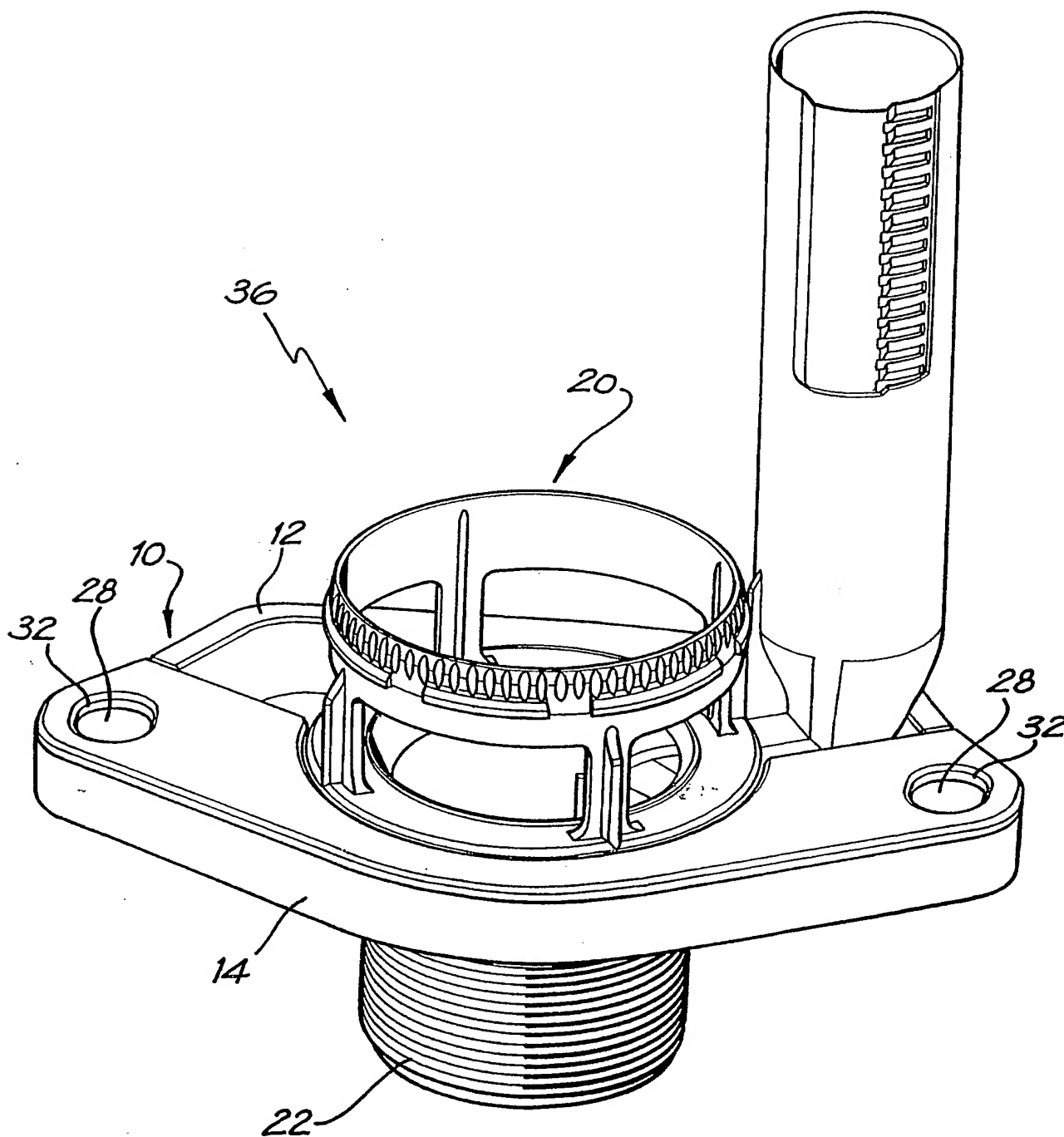


FIG. 4

Inventor: ENGLAND
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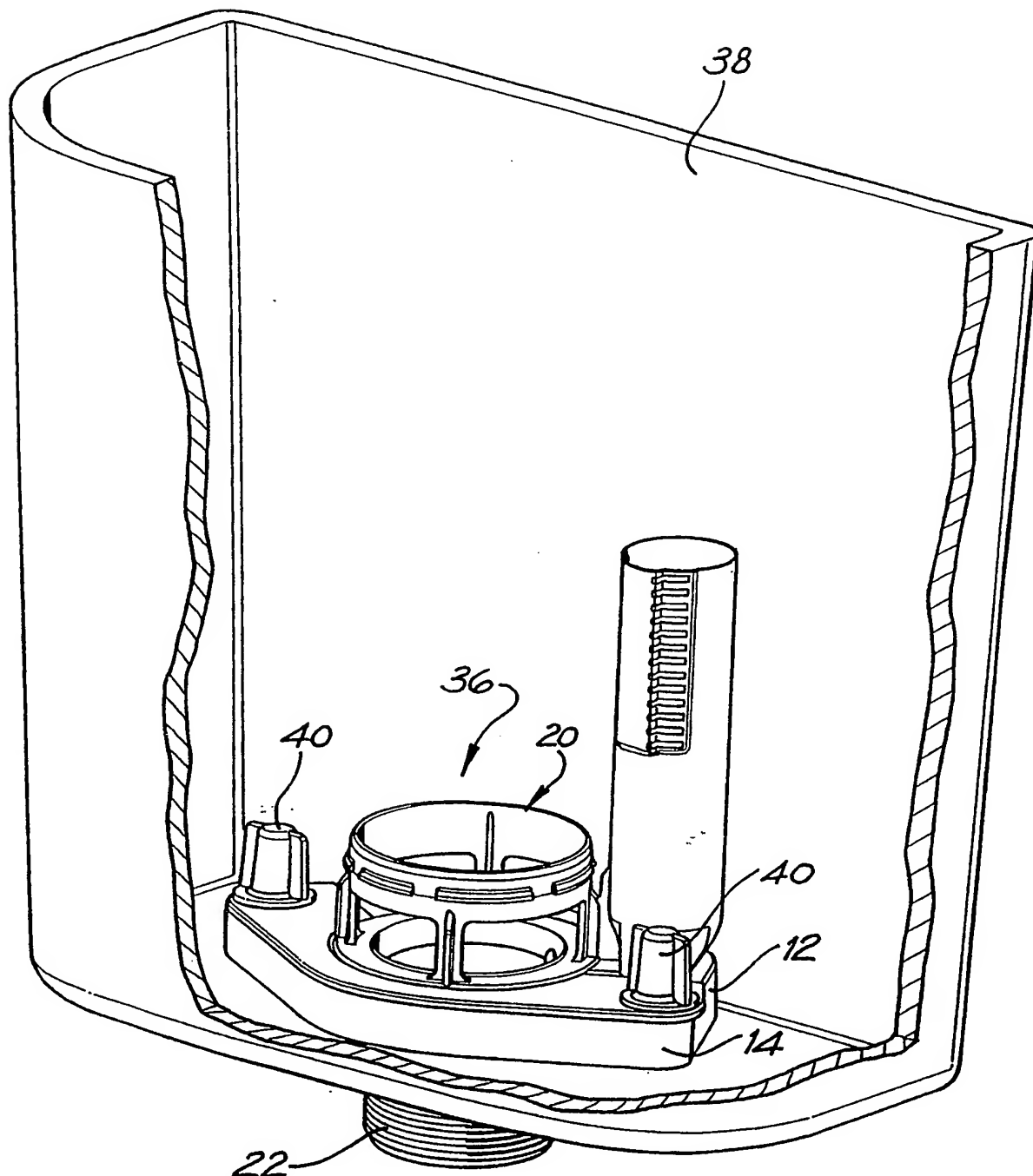


FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU03/01107

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. ⁷: E03D 1/34, E03D 1/35

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Refer Electronic Database consulted below

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
AU: E03D 1/34, E03D 1/35

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Derwent World Patent Index: (E03D-001/34 or E03D-001/35) and (MOUNT+ OR BRACKET+)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5088133 A (CHEN) 18 February 1992 See Figs. 3, 6	1 - 12
A	US 6192526 B (NICHOLS-ROY et al) 27 February 2001 See the whole document	1 - 12

☐ Further documents are listed in the continuation of Box C ☒ See patent family annex

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"Q" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 2 December 2003	Date of mailing of the international search report 10 DEC 2003
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU03/01107

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report				Patent Family Member	
US	5088133	DE	4033554	FR	2667892
US	6192526				
END OF ANNEX					